REMARKS

Claims 1-21 are pending in the application.

Claims 1-21 have been rejected.

Rejection of Claims under 35 U.S.C. §103(a)

Claims 1-10 and 13-21 stand rejected under 35 U.S.C. §103(a) as being unpatentable over DeKoning et al. (USPN 6,691,245) (hereinafter referred to as "DeKoning") in view of Takeda (USPPN 2004/0172509) (hereinafter referred to as "Takeda"). The Applicants respectfully traverse this rejection.

The cited art fails to teach or suggest reading a portion of data by reading the requested portion received from a second host and, "when a sub-portion of the portion of the data is not included in the requested portion [received from the second host], reading the sub-portion from the first data storage." The Examiner acknowledges that this feature is not taught by DeKoning and relies solely upon paragraphs 61-65 of Takeda to teach this feature. Office Action mailed June 8, 2007 (hereinafter referred to as "OA"), pages 3-4. The cited portions of Takeda recite:

[0061] Thereupon, the secondary host 100B then transmits a copy request ("journal copy request command") to the secondary disk array device 200B to initiate journal transfer from the primary disk array device 200A (Step 9300).

[0062] After receiving the journal copy request command, the secondary disk array device 200B issues a data read request to the primary disk array device 200A (Step 9310). The primary disk array device 200A transmits the requested data to the secondary disk array device 200B by executing the copy program 2110. Details of the journal copy processing will be described later.

[0063] On the other hand, the data that had been stored in PVOL 2212 before the journal acquisition process was started is not transferred to the secondary disk array device 200B even when the journal copy processing was started. Therefore, it is necessary to copy these data (hereafter "initial data") to SVOL 2214 from PVOL 2212. In the present embodiment, an initial copy process is used to transfer the initial data from the PVOL 2212 to SVOL 2214 (Step 9130). The initial data are transferred sequentially from the volume head area to the end of PVOL 2212 according to instructions of the host 100. This process may also be performed by allowing each disk array device 200 itself to execute the copy program 2110.

[0064] The initial copy and the journal copy processing may be performed asynchronously and in parallel. That is, the initial copy can be performed anytime after PVOL 2212 and SVOL 2214 have been specified based on the pair generation command, regardless of whether or not the journal acquisition process and the journal copy process has been performed or is being performed. However, as long as the initial copy has not been completed, the contents of SVOL 2214 does not reflects PVOL 2212 even if the restoration process 9126 has been performed at the secondary disk array device 200B. The restore or restoration process involves updating or coping the data of PVOL 2212 in the SVOL 2214 using the journal that have been received from the primary disk array device 200A according to the copy process 9124.

[0065] In one implementation, the initial copy initiated by the secondary disk array device 200B issuing one or plural read commands to the primary disk array device 200A in order to reduce the load of the primary disk array device 200A.

Paragraphs 61-62 of Takeda describe how a second host (host 100B) initiates copying of data from the primary storage array to the secondary storage array using a journal copying process. Thus, this portion of Takeda simply describes copying data from the primary storage array to the secondary storage array.

Paragraphs 63-64 describe how some of the initial data on the primary storage array may not be captured by the journal copying process and is instead copied to the secondary storage array using an initial copy process. Thus, this portion of Takeda also describes copying data from the primary storage array to the secondary storage array. Paragraph 65 simply indicates that the secondary disk array device can initiate the initial copy process, just as the secondary disk array device can initiate the journal copying process.

Thus, in the cited portions of Takeda, all data that is copied or otherwise accessed is copied from the primary storage array to the secondary storage array. Takeda describes how all data will be obtained from the primary storage array using the combination of the journal copying process and the initial copy process and clearly does not disclose or suggest reading a sub-portion of data from the secondary storage array, if that sub-portion was not included in data received from the primary storage array (or vice versa). Thus, the cited portions of Takeda clearly neither teach nor suggest a scenario in which a sub-portion of data is not received from one data storage and is instead read from

another data storage; instead, the cited portions of Takeda simply describe a scenario in which all data will be obtained from the same data storage.

In the Response to Arguments section of the Final Office Action, the Examiner states: "if the initial copy has not been completely transferred (i.e., there is a portion of the data not transferred into the appropriate device) then the second device issues read commands to the primary device. This portion of Takeda corresponds to the claim limitations of a sub-portion of the requested portion is not available in a received portion and reading that unavailable portion from anything corresponding to the claimed first data storage." Final Office Action, p. 11.

The Applicants first note that in the rejection of the claims, the Examiner has equated the secondary host of Takeda with the first host of claim 1, since the Examiner is stating that paragraphs 61-62 (which describe the journal copying process initiated by the secondary host) teach "reading the requested portion received from the second host." In other words, since the cited portion of Takeda teaches the copying of data from the primary storage array to the secondary storage array, any data received is received from Takeda's primary host, not from Takeda's secondary host. For this to apply to the feature of claim 1 at issue, Takeda's primary host is clearly being equated with the second host of claim 1. Furthermore, since only Takeda's primary host can access Takeda's primary storage array, the primary storage array is necessarily being equated with the second data storage of claim 1, which is accessible by the second host of claim 1.

Accordingly, the fact that Takeda then teaches the secondary device issuing read commands to the primary device (as part of the initial copy described in paragraphs 63-65) simply means that Takeda is teaching requesting and then receiving more data from Takeda's primary host. Since the primary host of Takeda is being equated with the second host of claim 1, this portion of Takeda, at best, teaches an action that would be equivalent to receiving both the requested portion and the sub-portion of the data from the second host of claim 1, and this scenario is clearly not what is described in claim 1. Thus, Takeda clearly does not teach or suggest "when a sub-portion of the portion of the data is not included in the requested portion [received from the second host], reading the sub-portion from the first data storage."

Stated another way, the rejection attempts to equate the primary host of Takeda with both the first host of claim 1 (when expressing how the cited art allegedly teaches "reading the sub-portion from the first data storage") and the second host of claim 1 (when expressing how the cited art allegedly teaches "reading the requested portion received from the second host"). This application of Takeda is clearly inconsistent with the express terms of claim 1, which clearly recite two hosts and expressly recite the actions performed by each host.

In response to the above arguments, the Examiner again equates the journal copying process, which reads data from Takeda's primary volume in order to copy that data to Takeda's secondary volume, with claim 1's act of "reading the sub-portion from the first data storage." OA, pages 11-12. This interpretation is inconsistent with the positions asserted elsewhere in the rejection, where the Examiner has equated Takeda's secondary volume with the first data storage. See, e.g., OA, page 4, lines 1-2.

Furthermore, merely copying data from Takeda's primary volume to Takeda's secondary volume does not teach or suggest reading a portion of data by reading the requested portion received from a second host and, "when a sub-portion of the portion of the data is not included in the requested portion [received from the second host], reading the sub-portion from the first data storage." The cited portions of Takeda do not teach or suggest reading a sub-portion of requested data from one storage volume if that sub-portion was not included in data received from another storage volume; instead, the cited portions of Takeda describe a process performed to initialize a volume.

Furthermore, in the cited portion of Takeda, all data is copied from the primary volume to the secondary volume. Nothing in the cited portions of Takeda teaches or suggests that a read is performed by reading data from both the primary and the secondary volume. Additionally, nothing in the cited portions of Takeda teaches or suggests reading from the secondary volume for any reason, let alone to perform a read.

Claim 1 is patentable of the cited art for the foregoing reasons, as are its dependent claims 2-10. Claims 13-21 are patentable over the cited art for similar reasons.

Claims 11 and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over DeKoning in view of Takeda and further in view of Carlson et al. (USPN 6,377,959) hereinafter referred to as ("Carlson"). Applicants respectfully traverse this rejection for at least the foregoing reasons set forth with respect to claim 1.

CONCLUSION

In view of the amendments and remarks set forth herein, the application and the claims therein are believed to be in condition for allowance without any further examination and a notice to that effect is solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephone interview, the Examiner is invited to telephone the undersigned at 512-439-5087.

If any extensions of time under 37 C.F.R. § 1.136(a) are required in order for this submission to be considered timely, Applicant hereby petitions for such extensions. Applicant also hereby authorizes that any fees due for such extensions or any other fee associated with this submission, as specified in 37 C.F.R. § 1.16 or § 1.17, be charged to deposit account 502306.

Respectfully submitted,

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